



# SPECIAL AIRWORTHINESS INFORMATION BULLETIN

Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation

**Federal Aviation  
Administration**

CE-06-11  
November 29, 2005

<http://www.faa.gov/aircraft/safety/alerts/SAIB>

*This is information only. Recommendations aren't mandatory.*

## Introduction

This Special Airworthiness Information Bulletin advises you, registered owners and operators of **Sierra Hotel Aero, Inc. (North American Aviation, Ryan Aeronautical) Navion (all models and all serial numbers) airplanes**, of worn out or defective fuel system selector valves and fuel system selector valves that may have received unauthorized repairs.

We have received two field service reports of fuel leaking from a Navion model airplane fuel system selector installed as part of the original type design or subsequent FAA-approved certification process. Defective fuel selector valves may have been the cause of engine power loss that resulted in airplane accidents. Since 1978, we've received 36 Navion accident reports relating to fuel selector valve problems, possibly due to unauthorized repairs on these selector valves.

## Background

There were two airplane accidents in the last year associated with leaking or improperly operating fuel system selector valves. One accident involved serious injuries. These valves may have had field repairs or rebuilding as part of routine continued airworthiness maintenance. We believe one of the valves received repairs prior to the accident. Improperly operating fuel system selector valves can disrupt fuel flow to the engine.

One accident investigation revealed that the fuel system selector valve was allowing air in the fuel line, which could have disrupted the flow of fuel to the engine.

Known companies that manufactured the fuel selector valves:

- Imperial Valve Company - P/Ns 108-HD, 114-HD, and 115-HD.
- Navion - P/N 147-30013-28, P/Ns 145-48001-11, 145-48066-1, 145-48076-1, and 145-48031 (various manufacturers).
- Whittaker - P/N 6235, or
- Any other fuel system selector valve supplied by STC, FAA Form 337 "Field Approval", or any other similar fuel system selector valve installed on a "Navion" model airplane.

**We are not aware of any FAA Approved field instructions or procedures to repair these fuel selector assemblies.** Navion Fuel Selector P/N 147-30013-201, -202, or -203 superseded all Navion fuel selector valves. Since new valves are available, we don't recommend valve repair.

## Recommendation

To prevent potential fuel disruption that can cause an engine power loss and a potential airplane accident, we recommend that you inspect the Navion fuel system selector valve for proper operation and make sure the valve cannot introduce air into the fuel line system.

An appropriately rated mechanic or repair facility should inspect these units for binding, leakage, or improper operation and replace any defective fuel selector valves with a serviceable unit.

#### **For Further Information Contact**

Tim Smyth, Senior Propulsion Engineer, FAA,  
Chicago Aircraft Certification Office,  
Propulsion Branch, ACE-118C, 2300 East  
Devon Avenue, Des Plaines, IL, 60018; fax  
(847) 294-7834; phone (847) 294-7132; email:  
timothy.smyth@faa.gov

Refer to Sierra Hotel Aero's Service Bulletin  
101A (attached), later revision, or Navion  
Aircraft International on the internet at  
"[www.navion.com](http://www.navion.com)" for more information.



Date: August 23, 2005

Navion Service Bulletin No. 101A  
(Supersedes Service Bulletin 101)

Subject: Fuel System – Fuel Selector Valve

Effectivity: Serial Numbers NAV-4-002 thru NAV-4-2561

Purpose: Previous design has a history of wear, causing internal leakage, valve step air ingestion and improper valve selector positioning. Internal leakage of the valve is suspected in several cases resulting in inadvertent fuel transfer between main and auxiliary tanks. Improper valve selector positioning and air ingestion has been implicated in several crashes – some fatal. The improper positioning is more likely to occur as detents in the original body wear, making positive tank selection less obvious.

Compliance: Mandatory

Description: The existing fuel selector valve must be removed and replaced as follows:

- a) Navion Part Number 147-30013-201 is the only approved valve for use with Navions equipped with ON/ OFF fuel valves for the main tank. This valve replaces both 145-48001-11 (Deutch D-51) and 145-48066-1 (Parker 702-FG).
- b) Navion Part Number 147-30013-202 is the only approved valve for use with Navions equipped with Main and auxillary selectable tanks. This valve replaces (Whittaker Part Number 6235), Navion Part Number 145-48076-1 (Whittaker W7000-2D), 145-48031 (Koehler Part Number 7651-2) and Imperial Part Number 108-HD.
- c) Navion Part Number 147-30013-203 is the only approved valve for use with Navions equipped with left tip, right tip and main tanks. This valve replaces Imperial Part Number 114-HD, Navion Part Number 147-30013-28 (Imperial 115-HD).

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## Installation Instructions

1. Drain ALL fuel tanks in accordance with applicable Navion Service Manual.
2. Remove Guard Assembly in nose wheel well (Navion P/N 145-31019-3).
3. Remove Interior Aft Guard Assembly (Navion P/N 145-52402-9).
4. Remove existing Fuel Selector Valve.
5. Install 145-51402-40 in accordance with applicable Navion Service Manual with flange facing aft and up.
6. Temporarily install Aft Guard Assembly in aircraft, ensuring that it is secured tightly against the cabin floor. Cut hole in existing Guard Assembly if needed to align with new Fuel Selector Body.
7. Install Upper Fuel Valve Assembly with Upper Guard Assembly (Navion P/N 145-52402-30). Install and slide rod into Lower Assembly until it bottoms out. Measure distance between existing Guard Assembly and the bottom flange of -38 Guard. Remove length from rod if needed until -38 guard is touching with no preload.
8. Install -38 Guard with NAS1032 screws and plate nuts.
9. Reinstall plumbing and safety wire banjo fittings.
10. Check valve for full range of motion and leaks.
11. Reinstall Aft Nose Wheel Well Guard.

Figure 1: 147-30013-203 Installation viewed from Nose Wheel Well looking Aft  
(147-30013-203 shown)

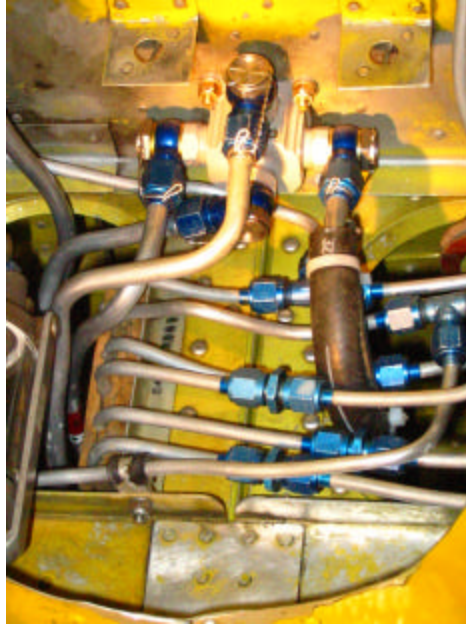


Figure 2: Sample Installation Looking Forward From Cockpit Floor  
(147-30013-201 shown)

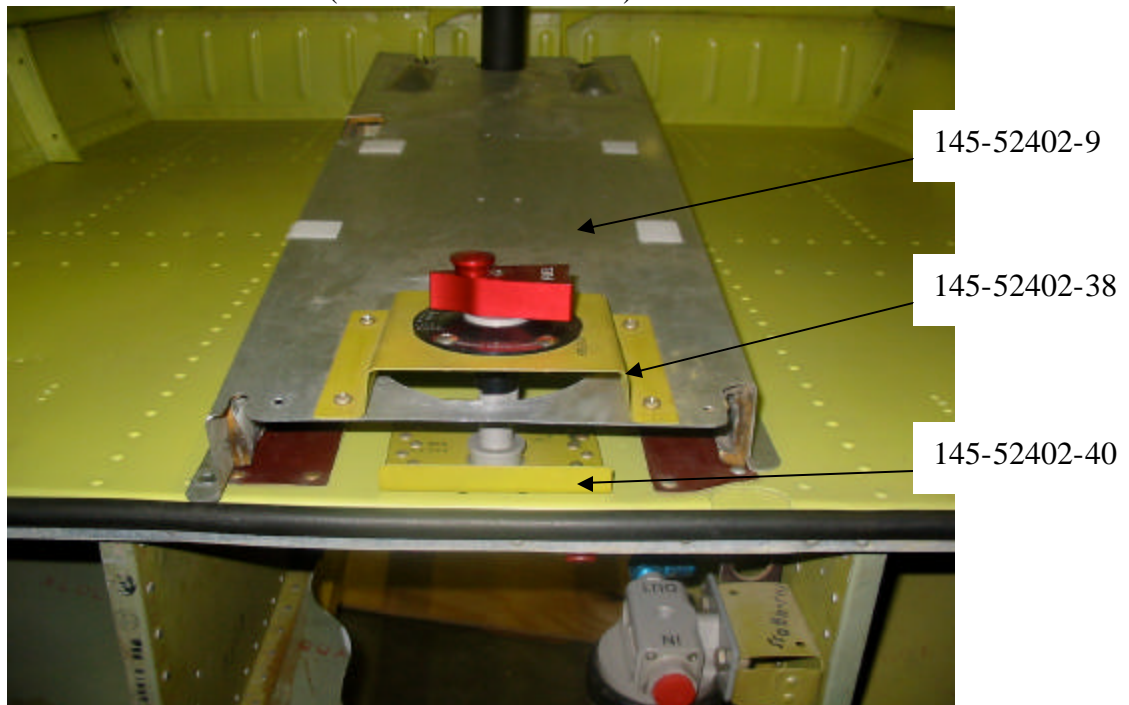


Figure 3: 147-30013-202 Selector Valve

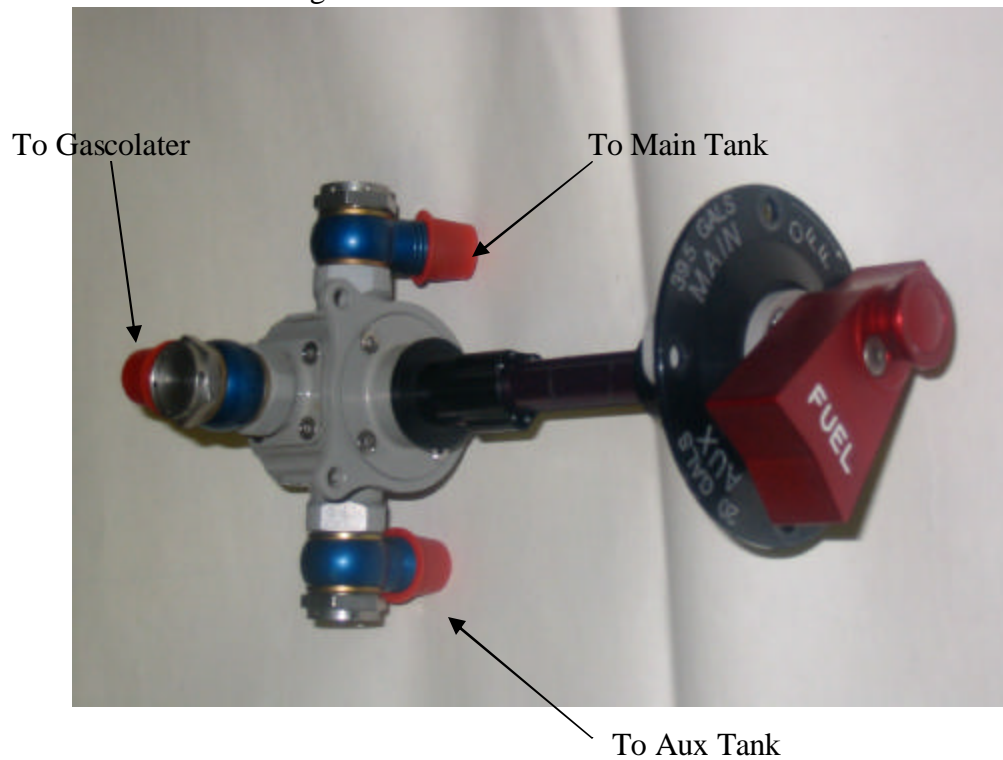


Figure 4: 147-30013-203 Selector Valve

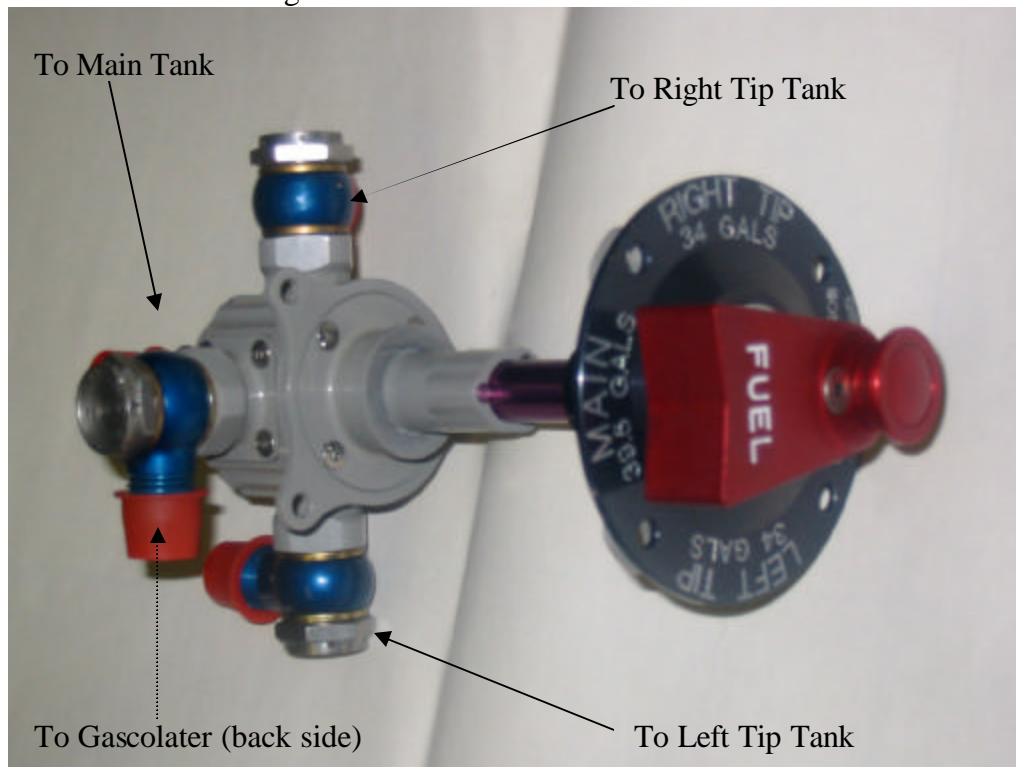


Figure 5: 147-30013-201 Selector Valve

